REMARKS

Claims 1-22 were presented for examination and were pending in this application. In the latest Office Action, claims 1-22 were rejected. With this amendment, claims 1, 12; 13, and 16 are amended. On the basis of the following remarks, consideration of this application and the early allowance of all pending claims are requested.

I. Objection to the Information Disclosure Statement

The examiner objected to the May 21, 2002 information disclosure statement (IDS) on the ground that it did not comply with 37 C.F.R. § 1.98 – specifically, that it did not include copies of each listed reference. Under 37 C.F.R. § 1.98(d), however, Applicants need not provide copies of references previously submitted to or cited by the Office in an earlier application that is (1) properly identified in the IDS and (2) relied on for an earlier effective filing date under 35 U.S.C. § 120.

The references listed in the IDS were cited in prior Application No. 09/124,333, filed July 29, 1998, now U.S. Patent No. 6,373,860. This parent application was properly identified in the IDS and is relied upon by the present application for an earlier effective filing date under 35 U.S.C. § 120. Accordingly, the IDS fully complied with 37 C.F.R. § 1.98, and the examiner should consider the references listed therein.

II. Claim Rejections – 35 U.S.C. § 102

Claims 1-6 and 9-19 were rejected as anticipated by U.S. Patent No. 6,061,392 to Bremer et al. Based on the following, Applicants respectfully assert that Bremer does not disclose or suggest each and every limitation of the claims, as amended.

Traditional DSL systems allow for only one voice channel, typically transmitted in the lower voice band (e.g., POTS) while the DSL data are transmitted in the higher frequency band. While a single voice line may be satisfactory for some users, other users such as large organizations need multiple voice lines. To meet this need, the claimed invention enables a plurality of local voice lines that can each carry a voice call to be implemented on a single digital subscriber line. In this way, bandwidth can be allocated to additional voice lines as needed, while idle voice bandwidth can be used for transmitting DSL data. Dynamically allocating bandwidth among voice and data traffic provides flexibility and efficiency for the DSL system.

Some or all of these features appear in the rejected claims, among which claims 1, 12, 13 and 16 are independent. For example, claim 1 recites a DSL modem that includes a bandwidth allocator that "defin[es] a bandwidth for each of a plurality of voice channels and unchannelized data." Claim 12 recites a DSL modem that includes "a plurality of voice lines for carrying channelized data" and a module that "dynamically allocates bandwidth for transmitting the channelized data based on availability of channelized data, and to dynamically reallocate unused channelized data bandwidth for transmitting the unchannelized data." Claim 13 recites a method for dynamically allocating bandwidth in a digital subscriber line that includes "allocating a portion of the bandwidth for each of a plurality of local phone lines in use, the remaining bandwidth available for unchannelized data." Lastly, claim 16 recites a method of transmitting voice calls and digital data over a digital subscriber line that includes transmitting digital and voice data over a digital subscriber line in a bandwidth and, "responsive to detecting [a] new voice call, dynamically reallocating a portion of the bandwidth to the new voice call."

Bremer does not disclose or suggest these claim limitations. Bremer describes a DSL modem that senses the presence of a voice call in the POTS band on a local loop. When there is

no POTS information on the local loop (i.e., there is no voice call), Bremer's modem uses the POTS band in addition to the higher DSL band to transmit data. This increases the available bandwidth of the modem when there is no voice call on the local loop. When Bremer's modem senses a voice call, however, it adjusts its bandwidth so as not to transmit data in the POTS band. This prevents the DSL data transmission from interfering with the voice call and corrupting both signals. In essence, Bremer's DSL modem takes advantage of the POTS band when it is not used, but it does not use the POTS band when necessary to allow a voice call.

In Bremer's system, therefore, voice calls can only be transmitted in the POTS band. Because the POTS band allows for only one voice call at a time, Bremer's modem does not enable multiple voice lines. Moreover, because Bremer does not support multiple voice lines or any voice lines outside the POTS band, there is no need for Bremer's modem to allocate bandwidth for the voices lines. The bandwidth for voice lines in Bremer is fixed as the POTS band. Accordingly, Bremer's DSL modem merely allocates bandwidth for the DSL data based on whether the POTS band is being used for a voice call. This contrasts sharply with the claimed invention, which dynamically allocates bandwidth to a number of voice calls and data traffic. Unlike Bremer, the claimed invention does much more than merely get data traffic out of the way of the POTS band when a voice call is detected. In the claimed invention, a DSL modem can process a number of voice calls and data on a single local loop by allocating bandwidth to each of the voice calls and to the data.

Therefore, claims 1-8 and 9-19, as amended, are novel over Bremer.

III. Claim Rejections – 35 U.S.C. § 103

Claims 7, 8, and 20-22 were rejected under 35 U.S.C. § 103 as being unpatentable over Bremer in view of U.S. Patent No. 6,091,717 to Honkasalo et al.

Independent claim 20 recites one implementation for dynamically allocating voice and data traffic in a digital subscriber line. Claim 20 includes the step of "composing a first superframe, the first superframe containing a plurality of network frames, each network frame containing a plurality of low-level frames, each low-level frame containing the voice and data traffic in their allocated timeslots." As claimed, DSL data and one or more voice calls are allocated among a number of timeslots. The voice and data traffic are then placed into a frame structure according to their allocated timeslots, which facilitates transmission of the signal over the local loop. In this way, the concept of framing of DSL data is extended to carry voice traffic. Allocating timeslots in the low-level frames for voice or data traffic on an as-needed basis allows for multiple voice lines to be transmitted outside the POTS band. It also allows for optimal allocation of DSL data bandwidth based on the demand for voice lines.

The examiner combined Bremer's DSL modem with a data framing method described in Honkasalo. It is noted that Honkasalo was cited only for its disclosure of framing. Specifically, the examiner asserted that Honkasalo describes arranging timeslots into a frame sequence, repeating the frames in a network frame, and repeating the network frames in a superframe. But this combination of Bremer's modem and Honkasalo's framing method does not render the claimed invention obvious because is does not suggest combining both voice and data traffic in a frame structure.

As explained above, although Bremer's modem dynamically allocates its DSL bandwidth based on the presence of a phone call, Bremer does not allocate bandwidth for voice lines. Bremer never envisions the possibility that voice calls can be transmitted outside the POTS band, nor does Bremer's modem process voice data for transmission over the local loop. Bremer's DSL modem merely gets out of the way of voice traffic; it does not process the voice data.

Honkasalo at best discloses the general concept of framing data, but there is no suggestion therein of combining voice and data traffic in a DSL modem to enable multiple voice lines dynamically over a digital subscriber line. Accordingly, even if one skilled in the art would use Honkasalo's framing system in Bremer's modem, it would not be obvious to frame voice and data traffic together in the manner claimed. At best, the combination suggests framing the DSL data alone, while leaving the single voice call to be transmitted as an analog signal in the POTS band.

Therefore, the proposed combination of Bremer and Honkasalo does not disclose or suggest each and every claimed feature, and claims 20-22 are thus patentable in view of the cited references.

Based on the foregoing, the application is in condition for allowance of all claims, and an early Notice of Allowance is respectfully requested. If the examiner believes for any reason direct contact would help advance the prosecution of this case to allowance, the examiner is encouraged to telephone the undersigned at the number given below.

Respectfully submitted,
ANTHONY J.P. O'TOOLE AND FARAJ AALAEI

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By: Robert A. Hulse

Robert A. Hulse, Reg. No. 48,473
Attorney for Applicant
Fenwick & West LLP
801 California Street
Mountain View, CA 94041
Tel.: (415) 875-2444
Fax: (415) 281-1350